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CHARACTERISTIC NUMBERS OF UNITARY TORUS-MANIFOLDS

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1. **Introduction.** Unitary torus-manifolds have been studied by Hamrick and Ossa in [5]. They show that the bordism class of such a manifold is determined by its fixed point set. In [4] tom Dieck introduced homotopical bordism theories. Now the question arises: Is a result corresponding to the one of Hamrick and Ossa true for homotopical bordism? The answer is given in Proposition 2.3. From this proposition we get the following

THEOREM. *Unitary torus-manifolds are determined by K-theory characteristic numbers*

The details of all proofs are contained in [6], the author's thesis, which was written under T. tom Dieck.

2. **Characteristic numbers.** There are two ways of defining what an equivariant unitary G-manifold should be. The first is given by stabilizing the tangent bundle with $\boldsymbol{R}^n$ (trivial G-action), the second by stabilizing with complex representations. We denote the bordism theories so obtained by $\bar{\mathfrak{U}}_*^G$ and $\mathfrak{U}_*^G$, respectively. There is an obvious natural transformation $j:\bar{\mathfrak{U}}_*^G \to \mathfrak{U}_*^G$ of equivariant homology theories.

LEMMA 2.1. *j is a monomorphism for compact abelian Lie groups.*

In [4] a homotopical bordism theory is defined, using equivariant Thom spectra. There exists a Pontrjagin-Thom construction $i:\mathfrak{U}_*^G \to U_*^G$.

PROPOSITION 2.2. *If G is a compact abelian Lie group, then i is injective.*

Let S denote the multiplicatively closed set in U_*^G generated by the Euler classes of finite dimensional complex representations. Let $\lambda: U_*^G \to S^{-1}U_*^G$ denote the localization map. As forming $S^{-1}U_*^G$ corresponds to "restriction to the fixed point set" we have in analogy to [5].

PROPOSITION 2.3. *λ is injective iff G is a torus.*

Let EG denote a free contractible G-space, $BG = EG/G$, the projection

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